

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (If known, see 17 CFR 1.5)

09/787173

INTERNATIONAL APPLICATION NO.

PCT/AU99/00776

INTERNATIONAL FILING DATE

14 September 1999

PRIORITY DATE CLAIMED

14 September 1998

TITLE OF INVENTION

METHOD OF AND APPARATUS FOR MANUFACTURING COMPLEX SHAPES

APPLICANT(S) FOR DO/EO/US

ANTON, Con

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information

- ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
- ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371
- ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 19(1)
- ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date
- ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
- a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
- b. ☒ has been transmitted by the International Bureau.
- c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
- ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
- ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
- a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau)
- b. ☐ have been transmitted by the International Bureau.
- c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
- d. ☐ have not been made and will not be made.
- ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3))
- ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
- ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

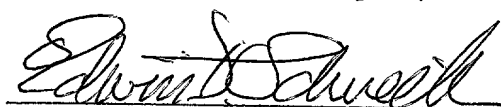
- ☐ 11. An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
- ☐ 12. An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included
- ☒ 13. A **FIRST** preliminary amendment.
- ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
- ☐ 14. A substitute specification.
- ☐ 15. A change of power of attorney and/or address letter.

- ☒ 16. Other items or information: International Search Report

"Express Mail" mailing label number EF 100061546 US

Date of Deposit March 14, 2001

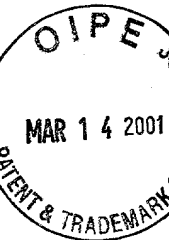
I hereby certify that this paper is being deposited with the U.S. Postal Service "Express Mail-Post Office to Addressee" service under 37 C.F.R. 1.10 on the date indicated above and is addressed to: Hon. Commissioner of Patents and Trademarks, Washington, D. C. 20231.



Edwin D. Schindler, Reg. No. 31,459

March 14, 2001

Date



FOI b7 - D 43460

17. ☒ The following fees are submitted:

09/787173

CALCULATIONS

PTO USE ONLY

Basic National Fee (37 CFR 1.492(a)(1)-(5)):

Search Report has been prepared by the EPO or JPO..... \$830.00

International preliminary examination fee paid to USPTO (37 CFR 1.482)

..... \$640.00

No international preliminary examination fee paid to USPTO (37 CFR 1.482)

but international search fee paid to USPTO (37 CFR 1.445(a)(2)).. \$710.00

Neither international preliminary examination fee (37 CFR 1.482) nor \$1,000.00

international search fee (37CFR 1.445(a)(2)) paid to USPTO..... ~~\$950.00~~

International preliminary examination fee paid to USPTO (37 CFR 1.482)

and all claims satisfied provisions of PCT Article 33(2)-(4)..... \$90.00

ENTER APPROPRIATE BASIC FEE AMOUNT =

\$ 1,000.00

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492(e)).

\$ -0-

Claims	Number Filed	Number Extra	Rate		
Total 19 Claims	19 -20 =	-0-	X \$22.00	\$ -0-	
Independent Claims	2 -3 =	-0-	X \$74.00	\$ -0-	
Multiple dependent claims(s) (if applicable)			+ \$230.00	\$ -0-	

TOTAL OF ABOVE CALCULATIONS = \$ 1,000.00

Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement
must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).

\$ -0-

SUBTOTAL = \$ 1,000.00

Processing fee of \$130.00 for furnishing the English translation later the ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492(f)).

+ \$ -0-

TOTAL NATIONAL FEE = \$ 1,000.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +

\$ -0-

TOTAL FEES ENCLOSED = \$ 1,000.00

Amount to be:

refunded \$

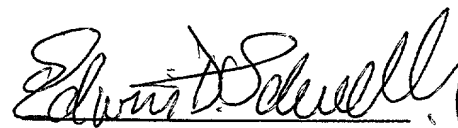
charged \$

- a. ☒ A check in the amount of \$**1,000.00 to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any
overpayment to Deposit Account No. 19-0450. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR
1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Edwin D. Schindler
Five Hirsch Avenue
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SIGNATURE

Edwin D. Schindler

NAME

31,459

REGISTRATION NUMBER

09/787173

JCOB Rec'd PCT/PTO 14 MAR 2001

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: CON ANTON

ART UNIT:

SERIAL NO.: 09/

EXAMINER:

FILED:

P.C.T. APPLICATION NO.: PCT/AU99/00776

P.C.T. INTERNATIONAL FILING DATE: SEPTEMBER 14, 1999

U.S. NATIONAL FEE PAID: MARCH 14, 2001

TITLE: METHOD AND APPARATUS FOR MANUFACTURING COMPLEX SHAPES

PRELIMINARY AMENDMENT

Hon. Commissioner for Patents
United States Patent and Trademark Office
Box PCT
Washington, D. C. 20231

Dear Sir:

Prior to an examination on the merits of the above-identified patent application, please amend the above-identified application as follows:

IN THE ABSTRACT OF THE DISCLOSURE

Please use the accompanying Abstract of the Disclosure,

"Express Mail" mailing label number EF 100061546 US
Date of Deposit March 14, 2001

I hereby certify that this paper is being deposited with the U.S. Postal Service "Express Mail - Post Office to Addressee" service under 37 C.F.R. §1.10 on the date indicated above and is addressed to: Hon. Commissioner for Patents, United States Patent and Trademark Office, Washington, D. C. 20231.


Edwin D. Schindler, Reg. No. 31,459

March 14, 2001
Date

09/787173, 05/14/01

which is contained on a separate sheet of paper, as required by 37 C.F.R. §1.72(b), as the Abstract for the instant patent application.

IN THE SPECIFICATION

Please amend the Specification follows:

Page 1, between lines 1-2 (immediately beneath the Title of the Invention), insert the following headings:

--BACKGROUND OF THE INVENTION--; and,

--Technical Field of the Invention--;

between lines 4-5, insert the following heading:

--Description of the Prior Art--;

between lines 11-12, insert the following heading:

--SUMMARY OF THE INVENTION--; and,

between lines 20-21, insert the following heading:

--BRIEF DESCRIPTION OF THE DRAWING FIGURES--.

Page 2, between lines 14-15, insert the following heading:

--DETAILED DESCRIPTION OF THE DRAWING FIGURES
AND PREFERRED EMBODIMENTS--.

IN THE CLAIMS

Please cancel Claims 14 and 21, and rewrite the following claims to now read as follows:

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1. (Amended) A wood working tool comprising a cutting tool, a carrier and guide means for moving the carrier past the cutting tool on a predetermined, but transversely variable path, whereby timber carried by the carrier can be cut reproducibly to size.

4. (Amended) A wood working tool as claimed in claim 2, wherein the guide devices have an outer sleeve located on an inner post by way of bearings so the sleeve is rotatable with respect to the post.

5. (Amended) A wood working tool as claimed in claim 2, wherein the guide devices can be spaced at different distances apart depending on the radius of curvature being cut.

6. (Amended) A wood working tool as claimed in claim 1, wherein the carrier comprises a body member on which the material to be cut can be located, and further comprising clamp means being associated with the body member whereby the material to be cut can be retained against movement relative to the carrier.

9. (Amended) A wood working tool as claimed in claim 7, by controlling the position of the beam, the required location for the material to be cut is achieved.

10. (Amended) A wood working tool as claimed in claim 7, wherein there is a stop member against which the material

to be cut be butted so that it is correctly located for cutting.

11. (Amended) A wood working tool as claimed in claim 1, wherein an edge of the carrier is directed towards the cutting tool and shaped to the same shape as the required cut, so that the material being cut is supported close to the position of the cut being made.

12. (Amended) A wood working tool as claimed in claim 1, wherein when several members are to be cut from one sheet of material, the material can be moved transversely relative to the blade automatically after completion of a cut and the return on the carrier to its initial position.

15. (Amended) A method for forming, or working, complex shapes of wood or similar materials, comprising the steps of mounting material onto a carrier, and associating the carrier with guide means so that on longitudinal movement of the carrier, the guide means will transversely move the carrier, the carrier and guide means being associated with a tool, so that the movement of the carrier is reflected by operation of the tool on the material.

17. (Amended) A method according to claim 15, wherein the tool is a bandsaw and wherein the material on the carrier is cut by the bandsaw to a shape which corresponds to the shape of the guide means.

18. (Amended) A method according to claim 15, wherein the side of the carrier adjacent the saw blade has substantially the same shape as required for the final cut material, so that the material before cutting is supported adjacent the point of cut.

19. (Amended) A method according to claim 15, wherein clamp means are associated with the carrier, the clamp means permitting movement of the material transversely of the carrier, so that a number of cuts can be made from a single piece of material.

REMARKS

Prior to an examination on the merits of the above-identified patent application, please enter the foregoing amendments.

Claims 1-13 and 15-20 are now pending in the above-identified patent application, as presented by the instant Preliminary Amendment. Claim 1 and 15 are presented in independent form.

The present application represents the U.S. National Phase of P.C.T. Application No. PCT/AU99/00776, filed September 14, 1999, and claiming foreign priority on the basis of a corresponding Australian patent application, filed September 14, 1998.

By the present amendment, dependent Claims 4-6, 9-12 and 17-19 have been amended in order to remove the multiple dependencies therefrom. Claims 14 and 21 have been cancelled. Various amendments have also been entered into the Specification and claims for the purpose of improved form.


A "marked-up" version of the claim amendments being entered is attached to this Preliminary Amendment.

The application is now in condition for a full examination on the merits.

Accordingly, an early examination on the merits and allowance are, therefore, respectfully requested and earnestly solicited.

Respectfully submitted,

CON ANTON

By 
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March 14, 2001

ABSTRACT OF THE DISCLOSURE

A wood working tool includes a cutting blade, a carrier, which can receive wood, and a guide device associated with the carrier for causing movement past the cutting blade on a predetermined path, so that a timber carried by the carrier can be cut reproducibly to size. The carrier may have a groove which corresponds to the shape to be cut, which is received by the guide device, and on movement of the carrier, the interaction between the groove and the guide device causes the carrier to follow a required path. The tool can be provided with a device for allowing a number of similar articles to be cut from a single piece of material and the cutting of similar pieces can be effected automatically.

VERSION OF AMENDMENTS WITH MARKINGS TO SHOW CHANGES MADE
(Dated March 14, 2001)

1. (Amended) [In a] A wood working tool [having]
comprising a cutting tool, a carrier and guide means [adapted
to cause] for moving [a] the carrier [to move] past the
cutting tool on a predetermined, but transversely variable
path, whereby timber carried by the carrier can be cut
reproducibly to size.

4. (Amended) A wood working tool as claimed in claim
2, [or claim 3] wherein the guide devices have an outer
sleeve [which is] located on an inner post by way of bearings
so the sleeve [can rotate] is rotatable with respect to the
post.

5. (Amended) A wood working tool as claimed in [any
one of claims 2 to 4] claim 2, wherein the guide devices can
be spaced at different distances apart depending on the
radius of curvature being cut.

6. (Amended) A wood working tool as claimed in [any
preceding] claim 1, wherein the carrier comprises a body
member on which the material to be cut can be located, and
further comprising clamp means being associated with the body
member whereby the material to be cut can be [retrained]
retained against movement relative to the carrier.

9. (Amended) A wood working tool as claimed in claim

MARKED AMENDMENTS-1

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7, [or claim 8 wherein by control of] by controlling the position of the beam, the required location for the material to be cut is achieved.

10. (Amended) A wood working tool as claimed in [any one of claims 7 to 9] claim 7, wherein there is a stop member against which the material to be cut be butted so that it is correctly located for cutting.

11. (Amended) A wood working tool as claimed in [any preceding] claim 1, wherein [the] an edge of the carrier [which] is directed towards the cutting tool [is] and shaped to the same shape as the required cut, so that the material being cut is supported close to the position of the cut being made.

12. (Amended) A wood working tool as claimed in [any preceding] claim 1, wherein when several members are to be cut from one sheet of material, the material can be moved transversely relative to the blade automatically after completion of a cut and the return on the carrier to its initial position.

15. (Amended) A method [of] for forming, or working, complex shapes of wood or similar materials, [including] comprising the steps of mounting [the] material onto a carrier, and associating the carrier with guide means [in such a way] so that on longitudinal movement of the carrier,

MARKED AMENDMENTS-2

the guide means will [cause transverse movement of]
transversely move the carrier, the carrier and guide means
being [in association] associated with a tool, so that the
movement of the carrier is reflected by [the] operation of
the tool on the material.

17. (Amended) A method according to claim 15, [or
claim 16,] wherein the tool is a bandsaw and wherein the
material on the carrier is cut by the bandsaw to a shape
which corresponds to the shape of the guide means.

18. (Amended) A method according to [any one of claims
15 to 17,] claim 15, wherein the side of the carrier adjacent
the saw blade has [generally] substantially the same shape as
required for the final cut material, so that the material
before cutting is supported adjacent the point of cut.

19. (Amended) A method according to [any one of claims
15 to 18,] claim 15, wherein clamp means are associated with
the carrier, the clamp means [being adapted to permit]
permitting movement of the material transversely of the
carrier, so that a number of cuts can be made from a single
piece of material.

MARKED AMENDMENTS-3

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Serial No. ~~726000000~~ : 09/787,173
 Filed ~~xxx~~ Issued: May 14, 2001
 For: METHOD OF AND APPARATUS FOR MANUFACTURING COMPLEX SHAPES

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
 STATUS (37 CFR 1.9(f) and 1.27(b)) - INDEPENDENT INVENTOR

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled
 METHOD OF AND APPARATUS FOR MANUFACTURING COMPLEX SHAPES described in

- ☐ the specification filed herewith
☒ application serial no. PCT/AU99/00776,
 filed 14 September 1999.
☐ patent no. _____, issued _____

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a non-profit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☒ no such person, concern, or organization
☐ persons, concerns or organizations listed below *

* NOTE: Separate verified statements are required from each person, concern or organization having rights to the invention averring to their status as small entities. (37 C.F.R. 1.27)

FULL NAME ANTON, Con
 ADDRESS 14 - 16 Horne Street, THOMASTOWN, Victoria 3074, AUSTRALIA
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN
☐ NON-PROFIT ORGANIZATION

FULL NAME _____
 ADDRESS _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN
☐ NON-PROFIT ORGANIZATION

FULL NAME _____
 ADDRESS _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN
☐ NON-PROFIT ORGANIZATION

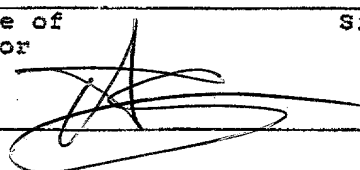
I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in the loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 C.F.R. 1.28(b))

I hereby declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

ANTON, Con

NAME OF INVENTOR NAME OF INVENTOR NAME OF INVENTOR

Signature of Inventor Signature of Inventor Signature of Inventor

Date  Date 10-5-01 Date

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JC08 Rec'd PCT/PTO 14 MAR 2001

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METHOD OF AND APPARATUS FOR MANUFACTURING COMPLEX SHAPES

This invention relates to a method and apparatus for manufacturing complex shapes, and is particularly useful for use with band saws, and will be described in relation to this application.

5 The practice in the woodworking industry where a number of shapes have to be cut using a band saw, has been to mark each individual shape on the timber to be cut, and then for a tradesman to cut around the marking.

Whilst a skilled tradesman can do this relatively quickly and accurately it does take a substantial degree of skill and no matter how good the tradesman, the individual items are
10 marginally different in shape, and the subsequent sanding which also acts to bring them to final shape and identity can be time consuming.

It is the object of the invention to provide means whereby articles can be manufactured specifically to shape and which will be directly reproducible.

The invention includes in a wood working tool having a cutting blade, guide means
15 adapted to cause a carrier to move past the blade on a predetermined path, whereby timber carried by the carrier can be cut reproducibly to size.

In a first form of the invention the carrier has a groove on the underside which corresponds to the final shape required and located on the bed of the band saw are guide
20 devices which can be received in the groove so that the carrier is constrained to follow the groove as it is moved through the saw.

In order that the invention may be more readily understood we shall describe, in relation to the accompanying drawings, one embodiment of the invention.

In these drawings:

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Figure 1 is a plan view showing the general arrangement of the device of the invention;

Figure 2 is a plan view of the carrier of the invention;

Figure 3 is plan view of material to be cut indicating the location of a number of parallel passes through the saw;

Figure 4 is an enlarged plan view of the carrier;

Figure 5 is a section along line 5-5 of Figure 4; and

Figure 6 is a view showing the guides located on a plate in the base of the saw and the alternative positions these may adopt.

10 In this specification, for convenience, we shall refer to the invention applied to cutting timber by a band saw but this is exemplary. The invention can also relate to the use of a router or even to a planer or sander. Where the word 'cut' is used, it is deemed to comprehend working of wood or similar material by any of these types of tools.

15 The concept of the invention to move timber past the blade 40 of a band saw 41 in such a way as to cut the timber to a predetermined shape without the operator necessarily having great skill with the use of the saw.

In the illustrated embodiment, we provide a carrier 10 which may be a wooden member, although it could be made of aluminium or some other metal if it is to be used to produce a very large number of articles, and the cost of producing a metal carrier would be justified.

20 In the underside 11 of the carrier there is provided a groove 12 which reflects the shape of the article to be cut and which is of a width so as to closely receive guide members 21, to be described hereafter.

It may be preferred that the side of the carrier, which is directed towards the blade, has a similar curve 13 which, in use, terminates just before the blade 40 so that whilst when the

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carrier 10 is moved past the blade, there is no direct contact between the blade and the carrier but at all times the carrier is close to the blade to give good support to timber or similar material 14 located on the carrier.

Alternatively the carrier could be made so that its width is such that, at the closest point of the groove to the blade, the carrier is spaced from the blade by a small distance and, of necessity and every other position is spaced from the blade by a further distance.

The first of these arrangements is preferred basically because, as mentioned, it supports the timber 14 being cut throughout the length of the cut but if this is not necessary, the other form may be cheaper.

10 Fitted to the carrier there is a clamp assembly 30 which is adapted to hold the timber being cut and this includes quick release clamps 31 to enable a piece of timber 14 to be located and removed from the carrier rapidly. The actual form of clamp is not particularly critical to the invention. There are a number of types of clamps known in the woodworking industry which would equally well be useable with the invention.

15 The clamp assembly can include a rack drive pinions 32 which are connected to the carrier by trunnions 35 and has a pair of racks 33 which are at right angles to the longitudinal axis of the carrier.

These racks 33 may be in grooves 34 or the like of the assembly 30.

The pinions 32 are connected by a rod 36 to which there is a drive knob 37 connected.

20 Connected between the racks 33 there is a beam 38 to which, in turn, the clamps 31 are connected, the connection being possible at a number of positions depending on the length of the timber to be cut. The beam may be provided with a number of apertures 39 to provide connecting means for the clamp so that the clamps can be spaced to give a good support for timber of different lengths. As illustrated there are two clamps 31 but there
25 could be more than this if required.

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If required, fitted to the other side of the carrier 11, there is a stop 40 which is directed inwardly towards the body of the carrier and which may be adjustable by means of a clamp or the like 41. This may be supported by a bracket 42 connected to the carrier.

5 The clamps 31 may be adapted to rest on the upper surface of the timber 14 to be cut and may be formed to ensure that the timber is held firmly as will be necessary when the timber is being cut or being moved.

10 As illustrated, in Figure 6, the guide members 21 can be located on a plate 20 which is adapted to be set into the base 41 of the band saw, or I may provide an auxiliary base adapted to fit over the saw's original base, which auxiliary base is provided with a pair of guide members 21. As illustrated, the guide members 21 may be rollers, having their axes normal to the base and which are spaced apart along a line parallel to the blade of the saw.

The guide members 21 can be connected to the plate 20 at a number of positions 22 so as to be moveable to be nearer or further apart or closer or further from the blade. The positions 22 are shown to be apertures to which the guide members can be connected.

15 Where there are relatively slow curves it is desirable to have the guide members apart to give maximum stability and reproducibility.

Where the curves are relatively tight then to get the best following of the curves it is desirable to have the guide members closer together.

20 In a modified form of the invention, I may prefer to have the guide members located in a slot along which they are moveable and the members are biased towards the opposite sides of the slot. In this arrangement, the optimum positioning of the guide members will occur automatically. Where the members are moving along a line effectively parallel to the saw blade, they will adopt positions at the each side of the slot, as the curve becomes sharper, they will move closer together against their bias and the degree of movement will
25 depend on the sharpness of the curve. When the curve again becomes shallower, they will move apart.

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Rather than using a cutout groove 12 in the underside of the carrier member 10, we could have a pair of grooves which are parallel and spaced, or even a central portion which is downwardly extending and which has, on each side, the same shape and guide members on the exterior of this, against which the, movement could occur.

- 5 When the device is to be used the timber 14 to be cut is located on the carrier 10 and clamped thereto by clamps 31.

If the carrier has its inner edge in the required curve, the first possibility discussed above, the timber must be clamped so that it overlays the carrier throughout the length of the carrier.

- 10 This location can be achieved by the use of the stop member 40 which, after location has been completed may be removed so as to cause no obstruction to the movement of the saw blade 40.

- 15 When the timber or other material is located, the carrier/timber combination is caused to move past the band saw blade, the constraints on the carrier by the groove 12 co-operating with the guide means 21 are such that the timber passes through the band saw and because of the transverse movements of the carrier forced on it by the groove, the required shape is provided on the edge thereof.

- 20 If, of course, a cut is being made for a second side of a member, assuming a member is to be symmetrical, then the timber must extend from the carrier by a distance equal to the required width of the member to be manufactured. This can be controlled by the location of the stop 41 and the manipulation of the knob 37 which causes the timber to be moved over the surface of the carrier and outwardly therefrom. Thus, by variation of the position of the stop 41, or control of the rack knob 37, the width of the timber being cut can be varied.

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The operator would be at the end of the carrier at the left of Figure 4 so can remove the cut portions as cutting is completed, move the carrier backwards and then operate the rack knob until the timber reaches the stop 40.

It will be seen that correctly used the device of the invention can, not only, ensure that —
5 curves in timber, or for that matter plastic or other soft material, can be very closely replicated on separate pieces of timber or other material but also such curves can be replicated on two different sides of a single piece of timber, so that such articles as chair legs or arms which are curved can be readily manufactured and the devices so manufactured can be of extremely close tolerance, needing a minimum of finishing in the
10 form of sanding or the like. Also, where a piece of timber wider than the required width of the article is used, two or several articles can be cut repetitively from the one piece of timber. This is shown on Figure 3 where a number of articles are shown dashed on the surface of a piece of timber.

It is possible to control the movement of the racks automatically so then when one piece of
15 timber has been cut, and the carrier returned to its initial condition, the timber will be moved forwardly to automatically adopt the required position for the next cut. It is also possible to automate the cutting movements so that not only is the timber moved transversely when a cut is completed and the carrier is returned to its initial position but also to automate the carrier return so that there is little operator input once the timber is
20 loaded onto the carrier until all of the possible components are cut.

It will be seen that the invention provides something which has not previously been available in the art and that is direct reproducibility of a particular shape without any necessity of marking and without the need for great skill in passing the timber being sawn through the band saw or other tool.

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I claim:

1. In a wood working tool having a cutting tool, guide means adapted to cause a carrier to move past the tool on a predetermined but transversely variable path, whereby timber carried by the carrier can be cut reproducibly to size. —
2. A wood working tool as claimed in claim 1 wherein the carrier has a groove on the underside which corresponds to the final shape required and, located on the bed of the cutting tool are guide devices which can be received in the groove so that as the carrier is moved through the saw it is constrained to follow the groove.
3. A wood working tool as claimed in claim 2 wherein the guide devices comprise upwardly directed members adapted to permit the groove to pass thereover with minimum resistance.
4. A wood working tool as claimed in claim 2 or claim 3 wherein the guide devices have an outer sleeve which is located on an inner post by way of bearings so the sleeve can rotate with respect to the post.
5. A wood working tool as claimed in any one of claims 2 to 4 wherein the guide devices can be spaced at different distances apart depending on the radius of curvature being cut.
6. A wood working tool as claimed in any preceding claim wherein the carrier comprises a body member on which the material to be cut can be located, clamp means being associated with the body member whereby the material to be cut can be retrained against movement relative to the carrier.
7. A wood working tool as claimed in claim 6 wherein the clamp means are associated with a beam which can be moved transversely to the body member which in turn causes movement of the material to be cut.

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8. A wood working tool as claimed in claim 7 wherein the beam causes the material to be cut to be moved in a parallel manner until it contacts the stop member.
9. A wood working tool as claimed in claim 7 or claim 8 wherein by control of the position of the beam, the required location for the material to be cut is achieved.
10. A wood working tool as claimed in any one of claims 7 to 9 wherein there is a stop member against which the material to be cut can be butted so that it is correctly located for cutting.
11. A wood working tool as claimed in any preceding claim wherein the edge of the carrier which is directed towards the cutting tool is shaped to the same shape as the required cut so that the material being cut is supported close to the position of the cut being made.
12. A wood working tool as claimed in any preceding claim wherein when several members are to be cut from one sheet of material the material can be moved transversely relative to the blade automatically after completion of a cut and the return on the carrier to its initial position.
13. A wood working tool as claimed in claim 12 wherein the return of the carrier to its initial position and the transverse movement of the material are both effected automatically.
14. A wood working tool as claimed in any preceding claim wherein the tool is selected from the group comprising band saws, routers planers and sanders.
15. A method of forming or working complex shapes of wood or similar materials including mounting the material onto a carrier, associating the carrier with guide means in such a way that on longitudinal movement of the carrier, the guide means will cause transverse movement of the carrier, the carrier and guide means being in

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association with a tool, so that the movement of the carrier is reflected by the operation of the tool on the material.

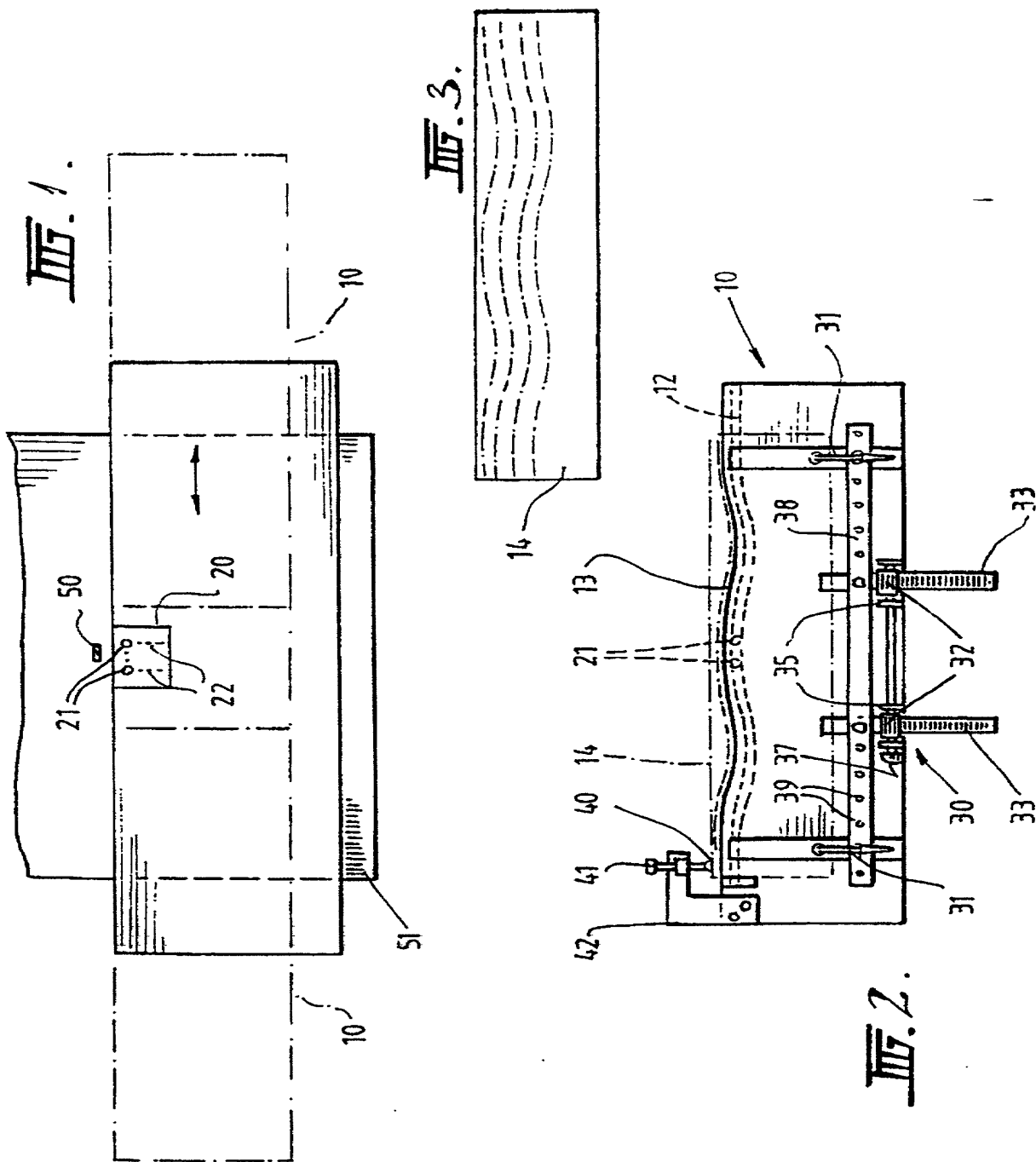
16. A method according to claim 15 where the carrier is provided with a groove in the underside thereof, the groove having the required shape of the cut or other working to be done on the material, the guide means being adapted to cooperate with the groove to cause transverse movement of the carrier when it is moved longitudinally.
17. A method according to claim 15 or claim 16, wherein the tool is a bandsaw and wherein the material on the carrier is cut by the bandsaw to a shape which corresponds to the shape of the guide means.
18. A method according to any one of claims 15 to 17, wherein the side of the carrier adjacent the saw blade has generally the same shape as required for the final cut material, so that the material before cutting is supported adjacent the point of cut.
19. A method according to any one of claims 15 to 18, wherein clamp means are associated with the carrier, the clamp means being adapted to permit movement of the material transversely of the carrier so that a number of cuts can be made from a single piece of material.
20. A method according to claim 19, wherein the clamp means are associated with a beam which can be moved transversely relative to the longitudinal axis of the carrier, thus permitting the material to be located at required positions for multiple cuts.
21. A method as claimed in any one of claims 15 to 20 wherein the transverse adjustment of the material to be cut or this movement together with the return of the carrier to its initial position after a cut are done automatically.

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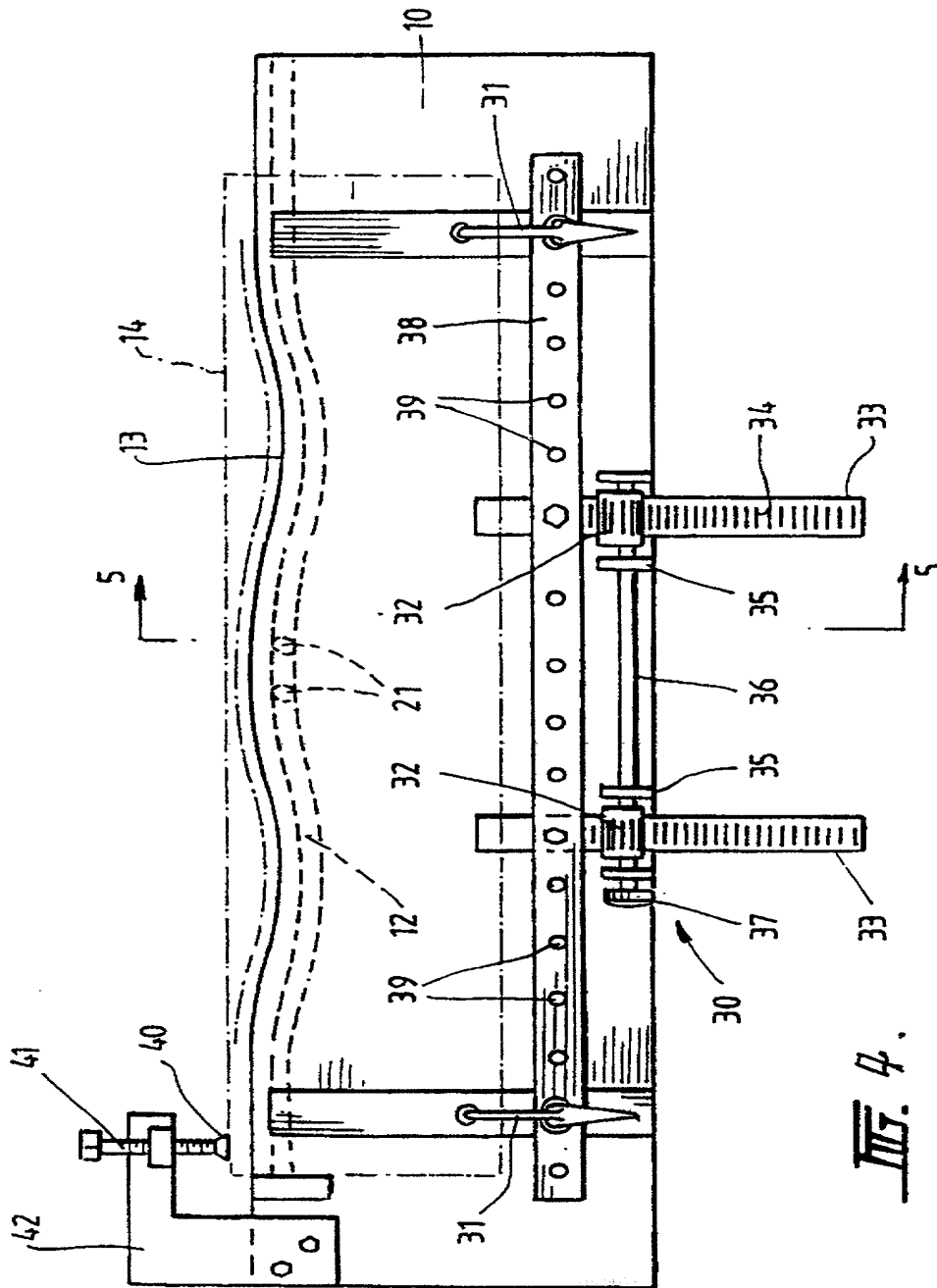


Fig. 4.

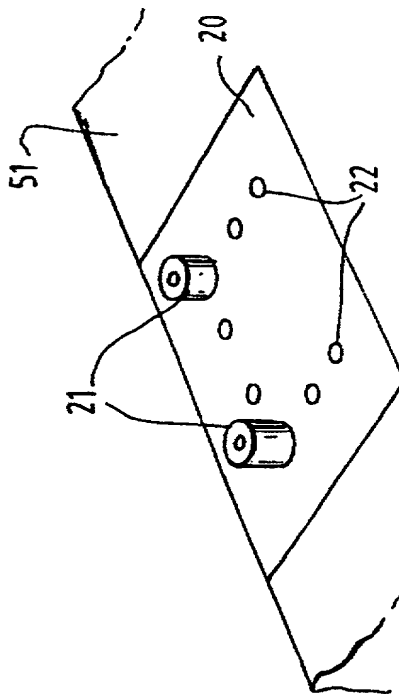
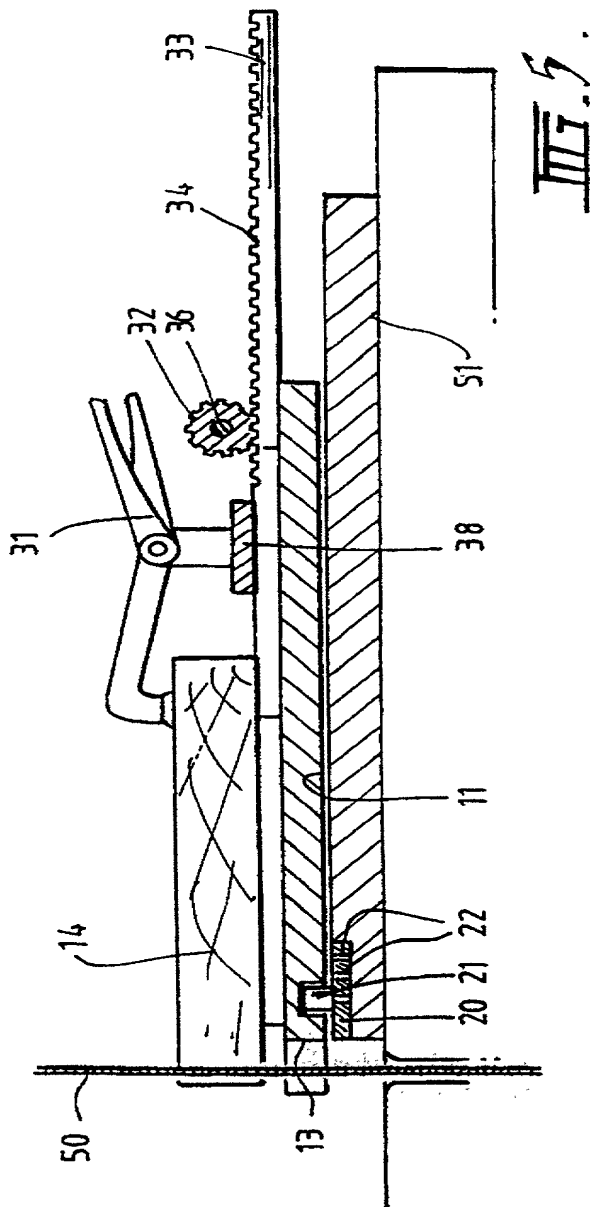
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Declaration and Power of Attorney For Patent Application

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

METHOD OF AND APPARATUS FOR MANUFACTURING COMPLEX SHAPES

the specification of which

(check one)

☐ is attached hereto.

☒ was filed on September 14, 1999 as

PCT Application Serial No. PCT/AU99/00776

and was amended on _____
(if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed

PP5877	AUSTRALIA	14 September 1998
(Number)	(Country)	(Day/Month/Year Filed)
_____	_____	_____
(Number)	(Country)	(Day/Month/Year Filed)
_____	_____	_____
(Number)	(Country)	(Day/Month/Year Filed)
_____	_____	_____

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Yes	<input type="checkbox"/> No

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (List name and registration number)


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